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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Eye for Battle

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A SCIENCE SERVICE PUBLICATION

MEDICINE

Cigarettes and Cancer

Primary argument linking cigarette smoking to cancer comes from statistics showing an increase in lung cancer at the same time cigarette consumption has increased markedly.

➤ BURNING BESIDE the glowing tips of some billion cigarettes today is the hotly debated question, Does cigarette smoking cause lung cancer?

Tobacco company stocks dropped sharply after the medical reports early this month charging that it does. Whether and how much cigarette sales are off will not be known exactly until after the end of the year when records for the final quarter are available.

Tobacco company experts today are said to be more annoyed than scared, and to be readying answers to the medical charges.

When the worried smoker, however, asks his doctor what about it, the chances are he will be told to cut down on his smoking if he has been smoking heavily. Some doctors will advise stopping altogether, others may advise moderation, as most have in the past.

In the present state of knowledge, no one can guarantee that a person who quits smoking, or who has never smoked, will not get lung cancer. It can be said, however, that a person who has his chest X-rayed regularly has a good chance for early discovery of lung cancer if he develops one, and that an operation, especially in the early stages, to remove the cancer and the lung if necessary, has a good chance for success.

Primary argument linking cigarettes with lung cancer comes from statistics showing an increase in lung cancer has come during the same period that cigarette consumption has increased markedly. Backing this are statistics showing that, in cases of cancer of the lung, there is almost always a history of excessive smoking for a period of at least 20 years, and that it is rare to find lung cancer in a non-smoker.

However, a Yale professor, who is director of statistical research for the American Cancer Society, E. Cuyler Hammond, says there is still no reliable statistical evidence to prove that cigarette smoking causes cancer. Referring to previous studies, he said that "certain investigators, including myself, are not completely convinced as to the validity of the results, in spite of the fact that a number of independent studies conducted in more or less the same way led to more or less the same apparent conclusions."

Right now Prof. Hammond is directing a study of the smoking habits of 204,000 men. This study for the American Cancer Society is reversing the usual direction of such studies. It is designed to learn the smoking habits of men while they are alive and compare these with the causes of their deaths when they die. In the past, the comparison has been of smoking habits of patients with lung cancer and those without it. This has the weakness that until a person develops lung cancer or until he dies, no one can say he is not a lung cancer patient or going to become one.

Some of the arguments linking cigarette smoking to lung cancer come from laboratory experiments with mice. Cigarette smoke tar painted on the skin of mice over about a period of a year will produce cancer in these animals. An answer to that could be found from laboratory experiments in which other tars painted on mouse skin produced cancers.

Cigarette smoke tar is not the only possible cancer-causing product of combustion to which men and women have been increasingly exposed in the past quarter century. Fumes and gases that pollute city air on a smoggy day can do more than smart the eyes. They can, in the opinion of more than one scientist, take a good share of the blame for the increase in lung cancer. Chemicals from these fumes, when painted on mouse skin, will also produce cancers.

More convincing, perhaps, than the skin-painting experiments are some reported about a year ago and also earlier. In the latest ones, mice were housed in a special cage with a specially designed automatic smoking machine. While the animals did not actually smoke cigarettes, they came as close to it as scientists could contrive. At least they breathed cigarette smoke from cigarettes smoked by the machine at the rate of one an hour for a 12-hour day.

Half a lifetime of this increased the chances of getting lung cancer by about one-third—that is, for mice with a hereditary tendency to lung cancer. Similar experiments run in 1943, but for a shorter time in mouse life, showed no difference in lung cancers between mice who "smoked" and those that did not. Maybe this means the smokers who quit have a better chance of escaping lung cancer than those who continue the habit.

Glandular activity that drives men and women to chain smoke may be a factor in causing lung cancer rather than the tobacco itself. This idea was advanced last year by a professor of surgery who has seen and operated on many lung cancer patients. He pointed out that there are numerous authenticated cases of lung cancer in persons who never used tobacco in any form.

Arsenic, sprayed on tobacco plants to destroy crop-eating insects, has also been blamed for the cigarette-lung cancer situation. If true, the remedy would be simple.

If cigarette smoking is related to lung cancer, it will be important to know the degree of the relationship, Prof. Hammond has pointed out. To use such a finding to save lives, either people must be persuaded to give up smoking or the harmful ingredients must be discovered and removed from cigarettes. Unless the relationship between lung cancer and smoking is large, neither is apt, in his opinion, to be accomplished.

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MEDICINE

Restore Brain Chemical Process in MS Patients

➤ A CHEMICAL that tends to restore normal brain and nervous tissue chemistry in multiple sclerosis patients has been discovered by Drs. John E. Adams and Gilbert S. Gordan of the University of California School of Medicine, San Francisco.

The National Multiple Sclerosis Society in New York, which supported their work, calls the discovery "significant in that it may lead to the cause and possible treatment" of this central nervous system disease that afflicts an estimated quarter of a million persons in the United States alone.

The chemical whose effect was discovered by the California scientists is called a succinate. They came to its discovery through a study of the way the brain tissue of MS patients handles another chemical, glutamic acid.

In 12 of 15 normal persons, amidation of glutamic acid was carried on by the brain tissue, they found. This, it is believed, represents a mechanism for removal of ammonia within the brain cells. Removal of the ammonia is a necessary factor to avoid poisoning in the nervous tissue.

In eight out of nine MS patients, however, the amidation of glutamic acid was not carried on. But injections of succinate into the veins of the patients restored the amidation pattern toward normal.

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DERMATOLOGY

Procaine Gives Relief To "Chronic Itcher"

➤ THE "CHRONIC itcher" who has not been helped by other recognized forms of treatment can sometimes be relieved of his misery by doses of procaine, Dr. Samuel R. Perrin of the Western Pennsylvania Hospital, Pittsburgh, reported at the meeting of the American Academy of Dermatology and Syphilology in Chicago.

Procaine is known chiefly as a local anesthetic. For relief of itching it can be taken by mouth, can be injected into veins or can be put right on the itching skin in a solution called efocaine.

In some of the more acute itchy conditions, Dr. Perrin said, the period of discomfort can be hurried over by procaine.

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METEOROLOGY

More Support Urged For Weather Service

➤ ADMINISTRATION REORGANIZATION ideas for government bureaus and departments can be cheered by at least one of them—the U. S. Weather Bureau. This appears from the report of the Department of Commerce Advisory Committee on Weather Services to Secretary of Commerce Sinclair Weeks.

A bigger budget, an aggressive research program, return of certain research, climatological and observing functions from the Armed Forces to the Weather Bureau, and the addition of more forecasters are among the committee's recommendations.

Decentralization, encouragement of state and local governments to take part in some programs and encouragement of private meteorology are other recommendations.

High praise for the Bureau's present chief, Dr. Francis W. Reichelderfer, and for the "frugality" of its operations is given.

"We know of no other governmental agency that has been so economical in the expenditure of its funds," the committee declares.

Per capita cost of U. S. Weather Bureau services is, roughly, 18 cents, compared to 20 cents in England, 47 cents in the USSR and 50 cents in Canada.

The committee was composed of eight non-governmental meteorologists under the chairmanship of Joseph J. George of Atlanta, Ga.

The Weather Bureau needs more funds for such projects as a national radar storm detection network and electronic computers in forecasting, the committee said.

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ARCHAEOLOGY

Colored Flint Further Piltdown Fraud Evidence

➤ MORE EVIDENCE has been produced that the Piltdown Man discovery was in part a deliberate fraud foisted upon science.

Drs. K. P. Oakley and J. S. Weiner, British scientists, reported previously that the jawbone was that of a modern ape stained with chromate to make it appear ancient. Now they find that one of the so-called flint implements similarly was stained with chromate, although other flints also supposedly recovered from the earth layer just above the fossil skull were stained only with iron, as they would be by weathering.

This flint must have been "treated in that way by a forger requiring it to be of a certain color," the scientists report in *Nature* (Dec. 12).

When the stain was removed by acid, this flint was indistinguishable from a mechanically broken piece of flint such as can be found in any plowed field in the southern England area where Piltdown Man was unearthed in 1912.

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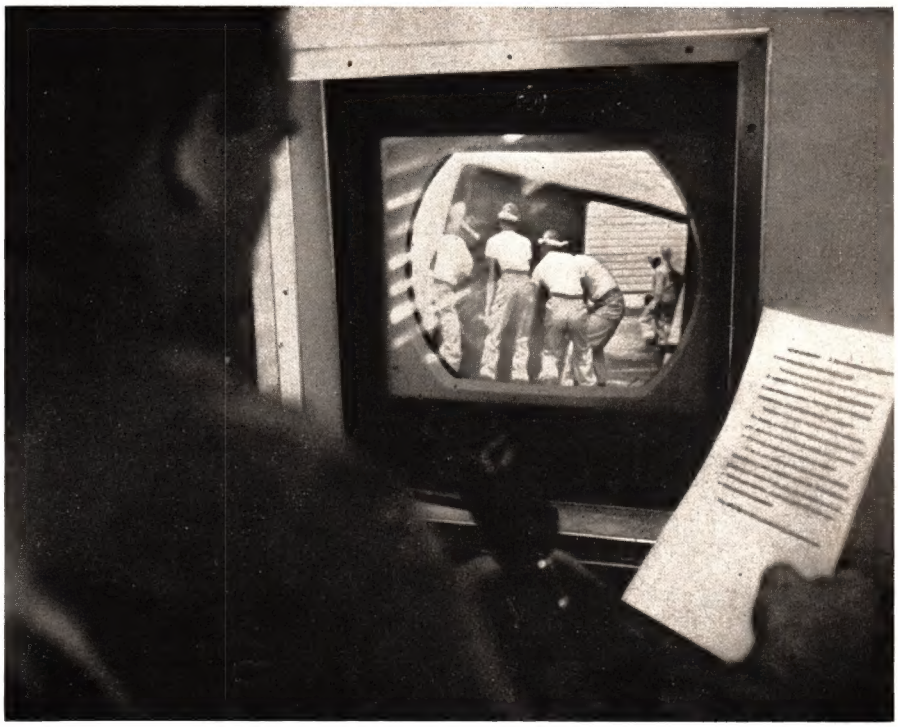

TRAINING BY TV—A member of the Signal Corps mobile television section gives a brief description of an airborne loading operation being televised by the unit as part of a class instruction program.

MILITARY STRATEGY

TV As Battlefield Aid

See Front Cover

➤ THE ARMY Signal Corps is experimenting with television as a weapon of warfare to save lives, time and money in future conflicts.

Battle commanders may be able to switch tactics almost instantly when the occasion demands it if they can watch on video screens the progress of their strategy at the front 10 miles away.

This would give the U. S. an advantage, especially if the enemy depends upon the usual verbal reports from the front—reports that often are conflicting and inaccurate, the Army points out.

Although television offers promise as a tactical tool, emphasis in experiments now under way at the Signal Corps' Pictorial Center, Long Island, N. Y., is being placed upon television's value as a training aid.

Through the video medium, the Army can instruct larger classes than it can accommodate in present auditoriums with good results. For instance, a one-hour lecture was delivered from a laboratory containing the radio equipment under study. It would have been difficult to squeeze all the soldiers into the small lab.

By watching a televised version of the lecture, each man was able to hear the instructor and see the small radio dials and knobs almost as clearly as if he were standing next to the electronic gear.

Complex field problems can be explained to military students through the eyes of TV cameras. By way of a closed-circuit telecast, which could not be picked up on home receivers, a group of West Point cadets watched an amphibious assault exercise off the Sandy Hook, N. J., coast.

The TV cameras in this case were carried aloft in L-20 liaison airplanes flying 3,000 feet above the beach. The picture was broadcast to the Signal Corps mobile station at Camp Wood 10 miles away. There it was "distributed" to 10 television receivers being viewed by the visiting West Pointers.

Shown on the front cover of this week's SCIENCE NEWS LETTER is such experimental television camera mounted in an L-20. The camera has a special lens mount to resist high winds. Before take-off, the pilot and cameraman check the problem to be televised in regard to terrain, flying hazards and safety restrictions. During the flight, an intercommunication system is used to maintain contact between the pilot and cameraman.

Army video also offers promise as a technical tool. It is able to monitor areas contaminated with radioactivity that would present a hazard to human life.

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SURGERY

Separated Siamese Twins

Doctors report successful separation of Siamese twin girls who have now passed their first birthday, marking the first known time both members survived so long after separation.

➤ A ONE-YEAR-OLD birthday celebrated on Dec. 14 by twin girls in Cleveland was a record-breaking event in medical history as well as in the lives of the baby girls, their parents and doctors.

For these girls were born as Siamese twins. They were separated surgically shortly after birth. And today both are alive and well, thus setting a medical record. Theirs is the first case, so far as is known, of both members of a pair of Siamese twins surviving this long after a separation operation.

Healthy, gaining nicely and "just fine," in the words of one of their doctors, the babies show every sign of continuing to live. A scar extending about an inch and a half down from the level of the breast bone on each baby is all that shows they once were joined.

The story of their birth and separation is reported in the *Journal of the American Medical Association* (Dec. 12) by Drs. Hyatt Reitman, Earl E. Smith and Jac S. Geller, obstetrician, pediatrician and surgeon, of Mount Sinai Hospital, Cleveland.

These separated Siamese twins are completely anonymous. Their names have not appeared in the public press and the medical report does not even give their mother's initials. She is identified only as "a 27-year-old woman" and the babies are called "twin A" and "twin B" in the journal.

Three months before the babies' arrival, Dr. Reitman recognized that their mother was going to have twins. But it was not known that they would be Siamese twins until they were born. Dr. Smith, who examined them shortly after birth, found them completely normal except for the band of flesh connecting them and for a heart murmur in one twin. Simultaneous electrocardiograms taken by Dr. Bernard Brofman showed normal heart rates and rhythms which were not synchronous. This was a sign that the babies had separate blood circulation systems.

The babies were given vitamin K to forestall undue bleeding, penicillin and streptomycin to check any infection, and taken to the operating room where Dr. Geller cut away the band of tissue connecting them.

The separated twins were put in an incubator and given oxygen continuously for six hours after the operation. After two weeks they were doing so well they could be taken home.

Fortunately, these babies did not have any organs or large blood vessels in common and the band connecting them was made up only of flesh and some cartilage from the breast bones.

The original Siamese twins, Eng and Chang, were joined in much the same way as the year-old Cleveland babies. Examination of their bodies after their deaths showed that the band that connected them was composed mainly of muscle, but, unlike the Cleveland twins, this band did contain a small band of liver tissue, showing that there was some slight sharing of internal organs. Medical authorities have said, however, that it would have been possible to separate Eng and Chang surgically, even in their day over a century ago, before the development of modern aseptic surgery, antibiotics, blood transfusions and modern anesthetics.

The Mouton Siamese twins, also girls, have both survived a separation operation performed in New Orleans. This was just three months ago, however, so they cannot yet be said to have reached the one-year survival record of the Cleveland babies. The Mouton twins were joined at the base of the spine.

A history making operation in Chicago separated the Brodie twins, joined head to head, a year ago, but only one of these boys, Rodney, survived. The other twin, Roger, died a few weeks after the operation.

Successful surgical separation of Siamese twins has apparently been done only three or four times previously. One authority reports three authentic cases with survival of one twin and death of the other. According to another authority, there have been four cases, in one of which both twins survived for six months.

A famous case at the beginning of this century was that of the "Radica-Doodica" Hindu sisters who toured with Barnum and Bailey's circus. At the age of 12, Doodica became critically sick with tuberculosis and a separation was performed to save her twin. Doodica died shortly after the operation but Radica was reported restored to complete health.

Dr. Reitman, who delivered the Cleveland babies, thinks that he and his colleagues may hear of other, so far unreported, successful separation operations after other doctors have read their report.

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MEDICINE

Medical Research Grants Follow Modern Practice

➤ COMMONWEALTH FUND grants for medical research are following the modern trend in medical practice and education of seeing the patient as a whole, rather than as a case of heart disease or diabetes or kidney disease, it appears from the 1953 Annual Report.

Sickness, it is believed, can seldom be laid to a single cause. More often it results from the interaction of many aspects of a person's environment, both external and internal. So first priority in the Commonwealth Fund's medical research grants goes to studies primarily concerned with the interaction between the organism and its environment, such as studies of growth and personality, certain types of neuropsychiatric research, and studies of relationships between social environment and chronic disease.

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MEDICINE

Two-Headed Babies

One case prior to the Indiana baby is known of a human with two heads surviving. These fused twins, born in 1937 in Russia, lived for over a year and began to "goo-goo."

➤ AT LEAST one case of survival for a year of a human baby born with two heads, like the one in Indiana, is known to medical science. That "rare being," like the Indiana one, had two heads and four arms. It also had four shoulders and was fused from there down into one body.

These fused, or coalescent, twins were born in a maternity hospital in Moscow, USSR, in 1937. The two-headed baby girl was extensively studied at the All-Union Institute of Experimental Medicine there. The babies, named Ira and Galya, were one year, 22 days old when they died.

Scientists observed that at an early age they stared fixedly at each other and, evidently to get better acquainted, one would reach out to feel the face of the other. If the touch involved scratching with sharp finger-nails, as it sometimes did, a loud cry of pain resounded throughout the ward, first from the scratched twin, then from the scratcher. But then in a minute the wrangle ended and the sisters sucked their fingers peacefully.

After a time such conflicts became rare and the sisters seemed to have reached an understanding. Soviet scientists believed that, since the sisters shared a common chest, crying by one was most unpleasant for the other. Each girl, perhaps through a conditioned reflex as the Soviet scientists theorized, learned to restrain all movements that caused her discomfort even though it would come through her sister.

Before the end of their short lives, the babies were able to hold up their heads well and to wave their tiny hands and hold toys firmly.

Because of the small size of their legs, their doctors did not think they would ever walk, though prolonged special training for walking had been planned for them at an older age.

Shortly before they died at the age of one year, they began to utter sounds comparable to the "goo-goo" of a six-month-old infant. This showed that their speech function was very much retarded, although the development of their nervous reactions suggested that they would have talked if they had lived longer.

The character of their nervous activity was distinctly individualized and they had "temperament." Ira was vociferous, energetic and strong, while Galya was a great deal quieter, somewhat dull and feeble. She rarely smiled and cried a good deal.

The Soviet scientists apparently had not thought of trying to separate the babies. They were given great care and were observed, but not experimented on, the object being to learn as much as possible about the physiology of sleep, appetite, pain and certain diseases without risking the health or comfort of the twins.

In spite of "trials and tribulations," a frail constitution and many ailments, the twins gained and a few days before their death, the scientists felt every assurance that they would survive.

In the 15 years since these twins died, medicine and surgery have made great strides which may give the Indiana boy fused twins a better chance for the future.

A two-headed baby girl born in England in 1946 lived only 50 hours. In that short time, doctors found the two heads breathed independently and had different pulse rates, indicating two sets of lungs. Because the two heads fed separately, the doctors believed this being had two stomachs.

Another two-headed baby, with a third arm on the midline of its body, and two hearts and two stomachs, was reported from Detroit in 1930. This baby died at birth.

Cats with two heads and seven legs, calves with two heads, calves and deer with two hind ends, a big two-headed trout, two-headed turtles and snakes, double or triple chick embryos on one yolk and two-headed or four-legged chickens have also been reported.

All these double monsters, as well as identical twins, originate from one single egg. In most cases what happens is that the single egg forms two separate centers of organization in close proximity to each other. But when these begin to expand and differentiate, they fuse instead of continuing as separately organized individuals, such as identical twins.

Fused twins may be loosely conjoined, as Siamese twins, or they may be joined in many odd ways, it appears from medical reports. One of these odd fusions gave a monster four legs and four arms but a fused chest and two heads fused so that each face was made up of two halves. One half belonged to one trunk and the other half face to the other trunk.

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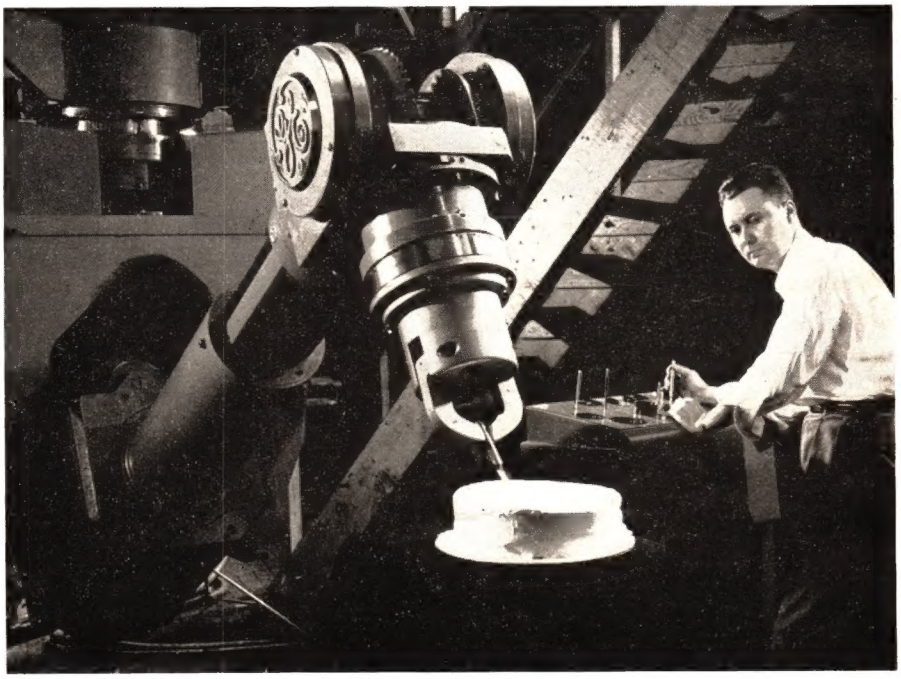
TECHNOLOGY

Robot Arm Can Make Cake

➤ A 15-TON mechanical arm that can make cakes, tie iron bars into knots and pour glasses of water has been created to perform Herculean tasks where men could not survive.

Despite its culinary prowess, the crane-mounted O-Man, will draw upon its mighty strength in the General Electric laboratory at Schenectady, N. Y., where nuclear aircraft engines are under study for the Air



JUST A SMALL PIECE, PLEASE—This is the mighty-muscled O-Man, the newest mechanical arm designed to handle radioactive materials in areas dangerous to man. It is sensitive enough to slice this cake.

Force and Atomic Energy Commission. O-Man, the big arm's name, is derived from "overhead manipulator."

With its two steel fingers, the record-sized machine can pick up heavy parts, position them and fasten them into place. It can drill and tap holes, use power wrenches, hammers or riveters, and operate a sheet metal saw. Messages are dispatched to the arm through 140 wires running to a remote "brain" situated where human arms are safe from radioactive burns.

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• RADIO

Saturday, Jan. 2, 1954, 3:15-3:30 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. George Wald, professor of biology at Harvard University and winner of the 1953 Lasker Award of the American Public Health Association, will discuss "How We See."

HEMATOLOGY

New Blood Factor U Widely Distributed

➤ DISCOVERY OF a new blood factor, called "U" because of its almost universal distribution, was announced by Dr. A. S. Wiener, Dr. L. J. Unger and E. B. Gordon of the Serological Laboratory of the Office of the Chief Medical Examiner of New York and the blood and plasma bank, University Hospital (New York University-Bellevue Medical Center), New York, in the *Journal of the American Medical Association* (Dec. 19).

The new factor was discovered after a Negro woman, taken to a hospital with a bleeding stomach ulcer, went into shock and died from reaction to blood being given her by transfusion. A previous transfusion given her had had to be stopped because of a reaction of chills and fever. Both donors, however, had belonged to the same blood group, B, as the patient.

After she died, her blood was again examined. Cross-matching tests showed that her blood contained an abnormal antibody that strongly clumped the cells of the two donors. Subsequent tests with blood of 425 Negroes and 690 white persons showed the U factor present in all but four of the Negroes.

The U factor, the scientists report, is not related to the A-B-O, M-N, Rh-Hr or K-k systems, or to any other blood factor discovered to date.

Blood grouping has become a highly specialized field, the scientists point out. In their opinion, the delicate tests needed can only be performed by specially trained persons. In order to avoid fatal reactions, they advise against having blood grouping and cross-matching done by interns who usually have very little training. Instead, they think, large hospitals should set up adequate blood grouping departments and small hospitals should make use of a central blood grouping laboratory.

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METEOROLOGY

Weather Control Studied

➤ WHETHER CONGRESS should enact laws to control the weather, if it is economically possible at all to make rain or to disperse fog, is one of the questions an 11-man committee just appointed to study weather modification will probably decide.

Retired Navy Capt. Howard T. Orville, chairman of the President's Committee on Weather Control and Evaluation and a consultant of the Bendix Aviation Corp., Baltimore, outlined the aims of the committee in Washington.

Western ranchers and farmers are spending hundreds of thousands of dollars a year on efforts to make it rain. Although many of them believe this money is well spent, the U. S. Weather Bureau, backed by close to 100 years of records, often can tell them that it would have rained without the rain maker's efforts. Capt. Orville pointed out, however, that an increase of even ten percent in rainfall in the West would "mean a great deal." Many scientists at present question whether cloud seeding achieves even this. The weather advisory committee, Dr. Orville said, will make a study of "all past, present and future cloud seeding experiments," then try to decide if they have been successful. In their work, the committee will have access to classified information, both of the government and of private operators, since it has the power to subpoena records. Thus it will be able to base its final decision recommending weather control legislation, due in 1956, on more scientific data than has been available to previous groups evaluating the claimed successes of rain making.

Under the terms of the Public Law 256, passed by Congress at its last session, the committee is required to report periodically to Congress, by way of the President. Not only information on cloud seeding collected by U. S. scientists, but results of experiments in such countries as Australia and Spain will be considered by the committee.

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BIOPHYSICS

Photosynthesis Method

➤ GREEN PLANTS may use a photoelectric process for the "crucial step" of converting energy to make sugars and starches for food from carbon dioxide and water.

This new theory, which will appeal to scientists working on the problem because it is both simple and profound, has been developed by Dr. Leonard S. Levitt of Stevens Institute of Technology, Hoboken, N. J.

According to this theory, a chlorophyll molecule, on bombardment with photons of red light, absorbs one quantum. This results in activation of an electron to such a high-energy level that it is easily extracted by a mild oxidizing agent intimately associated with the chlorophyll molecule, that is, the disulfide group of pyruvic oxidase.

The entire process, Dr. Levitt thinks, may be thought of as a flow of electrons actuated by light, or, essentially, as a photoelectric current flowing from water through the chlorophyll to the disulfide.

According to previous theories advanced by other scientists, the chlorophyll molecule transfers its electromagnetic energy to a disulfide ring and, through chemical reaction, two hydrogen atoms are extracted from water or some other substance.

Dr. Levitt thinks it "rather unlikely" that this would go on in a living cell in a water solution or suspension where ions could be formed with much less energy.

In reporting his theory in *Science* (Dec. 4), he states: "The transfer of electrons can occur much more rapidly and efficiently than the transfer of relatively cumbersome hydrogen atoms, and it is not to be supposed that nature has not yet been apprised of the fact."

According to his theory, many things scientists have been searching for, because they assumed they happen, need not be searched for because they do not happen.

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PUBLIC HEALTH

Milk, Living Standards Are Closely Connected

➤ THERE IS a close connection between a high standard of living in a country and its ability to produce and distribute wholesome milk, Dr. Jacques M. May, head of the department of medical geography, American Geographical Society, declared at the World Congress for Milk Utilization meeting in Washington.

Where milk is unobtainable or prejudices keep people from drinking it, the population is usually near starvation, he said.

In India, the people like milk and the country has the largest number of cattle in the world, but only a quarter of a pint of milk is available per person per day. It is against religion in India to kill cows. Old cows no longer producing milk compete for food with young cows. The result is the cows are as starved as the people.

A contempt for milk is traditional in China, Dr. May said.

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ASTRONOMY

Total Moon Eclipse

Five eclipses, three of the sun and two of the moon, are scheduled for 1954. Total eclipse of sun on June 30 will be first visible in any part of United States since 1945.

By JAMES STOKLEY

➤ A TOTAL eclipse of the moon, on the evening of Monday, Jan. 18, one of five eclipses in 1954, is the chief event on the month's astronomical calendar.

Visible all over the United States, as well as Canada and the rest of North America, it will be at its height at 9:32 p.m. EST (8:32 CST, 7:32 MST or 6:32 PST). A little more than three hours will elapse from the time the moon enters the earth's shadow until it leaves it.

Aside from this, we also have the usual January evening skies, which are always brilliant, although this year the presence of a bright planet makes them even more so. This is Jupiter, high in the south in the constellation of Taurus, the bull.

Its magnitude is minus 2.2 on the astronomical scale, so it exceeds in brightness any star, or any other planet, now visible.

The accompanying maps show the appearance of the heavens about 10:00 p.m., your own kind of standard time, on the first of January; an hour earlier at the middle of the month, and two hours earlier at the end.

Jupiter Is Only Planet

They show the location of Jupiter, just to the left of Aldebaran, the first magnitude star in Taurus that marks the animal's eye. Jupiter is the only planet in the evening sky.

Still higher, directly overhead as shown on the maps, we find Capella, in Auriga, the charioteer. To the left of Jupiter, in the constellation of Gemini, the twins, are Castor and Pollux. The latter is the brighter and a star of the first magnitude.

Below Jupiter we come to one of the best known of all the star groups, Orion, the warrior, which is easily recognized by the three stars in a row that form his belt. Above this trio is Betelgeuse and below is Rigel, both of them also stars of the first magnitude.

The brightest of the stars, which are distant suns and, unlike the planets, shine by reflected sunlight, is Sirius, the dog-star. It is in Canis Major, the great dog, below and to the left of Orion. Higher, and farther left, is Canis Minor, the lesser dog, with the bright star Procyon. Going upwards still farther from this group we are again in Gemini.

In addition to the stars mentioned, two others of the first magnitude are also shown on our maps, although their low altitude causes considerable atmospheric absorption of their light. This is particularly true of Deneb, in Cygnus, the swan, which is just above the northwestern horizon. It is all that remains visible of the northern cross, which shone so prominently in the evening sky a few months ago.

The case is opposite for the other star—Regulus, in Leo, the lion—which is low in the east. In coming months it will become more and more prominent, until on April evenings it will stand where Taurus does now.

January Lunar Eclipse

As for the other planets, Mercury and Venus are about in the same direction as the sun, and can hardly be seen at all. Venus, in fact, passes behind the sun on Jan. 29. Mars and Saturn are both in Libra, the scales, rising several hours before sunrise. Saturn is to the west, and although both now rate with stars of the first magnitude, Saturn is about one and three-quarters times as bright as its brother planet. Mars, of course, is characteristically red in color. Later in the year it will come into much greater prominence as it approaches within a little less than 40,000,000 miles of the earth on July 2.

The total eclipse of the moon on Jan. 18 is one of two eclipses that occur in January, although the first, which is of the sun on Jan. 5, is not of great interest in this part of the world. One must go to Antarctica or New Zealand to see it. But 1954 brings a total of five eclipses, one of them a total eclipse of the sun, the first visible in any part of the United States or Canada since 1945.

Basically, an eclipse occurs when one object gets between two others. On Jan. 18 the earth will pass between the sun and moon. Since the source of the moon's light is the sun, its illumination is then largely cut off.

On the other hand, the moon may get between the sun and the earth, and this is what happens on Jan. 5, so the moon's shadow will then reach toward the surface of the earth, in the region around the south pole.

Because the sun is 864,000 miles in diameter, and the moon only 2,160 miles, the lunar shadow tapers to a point, at a distance from the moon of about 230,000 miles. This is the inner shadow, the umbra, where the lunar disk completely hides the sun, and around it is a larger region, the penumbra, where the disk of the sun would only be partially covered.

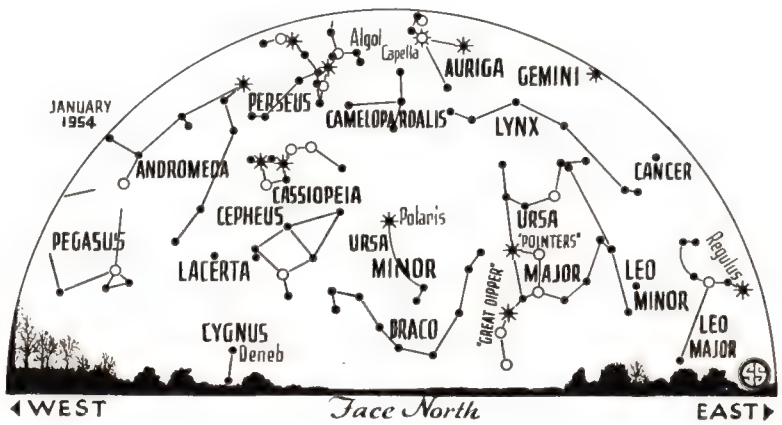
Sometimes the umbra reaches the surface of the earth. However, on Jan. 5 it falls short, so even in the part of the world, Antarctica, toward which the shadow is aimed, the solar disk would not be completely covered. The moon then will be far enough away that it will look a little smaller than the sun.

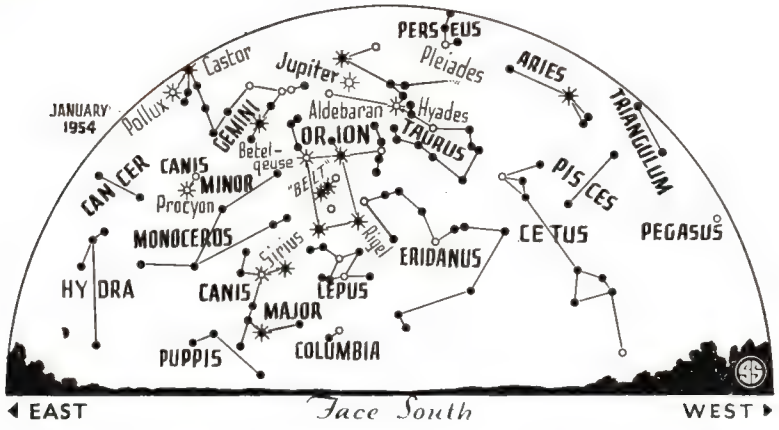
The result is that even though it goes in front of the sun a ring of that body, called the annulus, which is Latin for ring, remains visible around the dark moon. Hence such an eclipse is called "annular."

Totality Path in U. S.

On June 30 the moon again comes between sun and earth, producing the year's second solar eclipse. But this time the tip of the umbra does reach the ground. As it moves along it traces out a strip nearly a hundred miles wide and thousands of miles long—the path of totality—in which the total eclipse is seen.

This path starts in Nebraska as the sun is rising there, then travels northeastward over Iowa, Minnesota (including Minneapolis), Wisconsin and Michigan. After





crossing Lake Superior, it traverses the Canadian provinces of Ontario and Quebec to the coast of Labrador. Thence it goes eastward and southeastward over the Atlantic Ocean, southern Greenland, Iceland, Norway, Sweden, Lithuania, Russia, the Caspian Sea, Iran, Afghanistan, Pakistan, and ends in India as the sun is setting.

Many scientific expeditions will be located along this path to make the many observations that can only be made at such an eclipse. And also many astronomical enthusiasts, not professional astronomers, will gather at points of vantage to see this rare phenomenon, a total eclipse of the sun, which is unquestionably one of the most magnificent spectacles offered by nature.

For those who want to plan such observations, the U. S. Naval Observatory in Washington has issued a 42-page booklet, with tables and maps, entitled "Total Eclipse of the Sun, June 30, 1954," which gives full details as to how it will appear from different parts of the earth. This is obtainable for 40 cents from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Two weeks later, on the evening of July 15, the earth will again come between sun and moon, although the latter body will not enter completely into our shadow. Thus it will be only a partial eclipse; at best only a little more than four-fifths of the lunar diameter will be shaded. This eclipse will be visible in the eastern parts of the United States and Canada.

The year's fifth and last eclipse will come on Christmas day and, like the one which began the 1954 program, it will be of the sun and annular. The path over which the annular eclipse will be visible starts in the south Atlantic Ocean, crosses South Africa and the Indian Ocean, ending in Timor, the large island northwest of Australia. Over a larger area, including most of southern Africa, Australia, Indonesia and the Philippines, as well as part of Antarctica, the sun will be partially eclipsed.

However, it is the total eclipse of the moon on Jan. 18 that is of most immediate interest. The accompanying diagram shows the way the moon passes through the earth's shadow on that evening. North, i.e., the direction toward the pole star, is at the top. The large circle represents the shadow, and the small circles, I, II, III and IV, successive positions of the moon.

Position I occurs at 7:50 p.m., EST (one hour earlier for CST, two for MST and three for PST). At this time the moon starts to enter the shadow, and its curved edge will be seen gradually creeping over the lunar disk until 9:17 when the eclipse will be total, with the moon completely immersed in the shadow. During this time the moon does not disappear from view, for even in the center of the shadow there is some light, caused by rays from the sun which have been bent by the earth's atmosphere.

Because the blue waves of light are scattered in this passage through the air, thus giving the daytime sky its blue color, that which passes on through into the shadow is reddened, and the eclipsed moon has a typical coppery red color. In this particular eclipse the moon just gets into the shadow, and does not pass through its center.

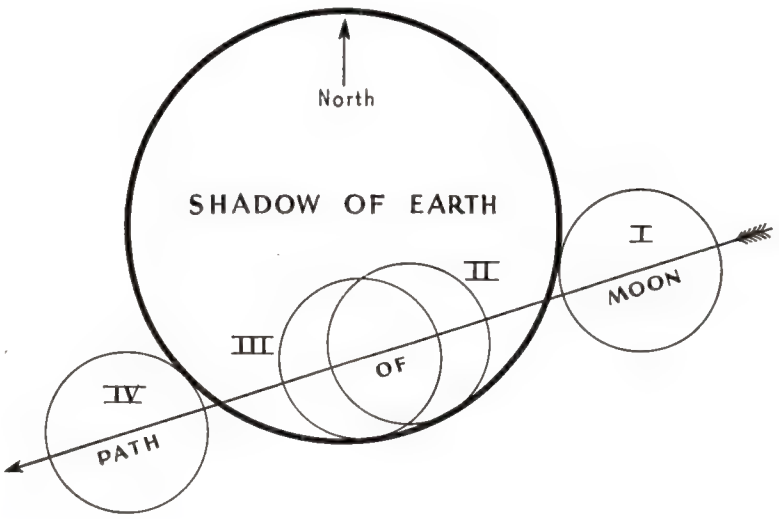
Hence the southern edge of the moon, which is never far from the edge of the shadow, will probably look noticeably brighter than the rest of its surface, even at mid-eclipse, which comes at 9:32 p.m., EST.

At 9:47 p.m. the total phase of the eclipse ends, and once more the curved edge of the shadow will be seen traversing the face of the moon. Finally, at 11:13 p.m., the moon will be out of the shadow and the entire eclipse will be over. However, the moon will still be in the outer part of the shadow, the penumbra, until 12:24 a.m., and during this period an observer on the moon would see the earth partially hiding the sun. But even with part of the sun shining on the moon it still looks so bright that it seems practically normal.

Celestial Time Table for January

Jan.	EST	
2	3:00 a.m.	Earth nearest sun, distance 91,348,000 miles.
	10:55 p.m.	Algol (variable star in Perseus) at minimum brightness.
4	9:21 p.m.	New moon, annular eclipse of sun visible in Antarctica.
5	7:44 p.m.	Algol at minimum.
8	4:34 p.m.	Algol at minimum.
10	5:00 a.m.	Moon nearest, distance 229,800 miles.
11	7:22 p.m.	Moon in first quarter.
15	8:30 p.m.	Moon passes Jupiter.
18	9:37 p.m.	Full moon, total eclipse of moon visible in U. S. and Canada.

TOTAL ECLIPSE of MOON, JAN. 18, 1954



The large circle represents the shadow of the earth, and the small circles, I, II, III and IV, indicate the successive positions of the moon as it passes through the shadow. The four phases shown occur at the following times:

I	7:50 p.m. EST	6:50 p.m. CST	5:50 p.m. MST	4:50 p.m. PST
II	9:17	8:17	7:17	6:17
III	9:47	8:47	7:47	6:47
IV	11:13	10:13	9:13	8:13

20 3:51 a.m. Algol at minimum.
23 12:40 a.m. Algol at minimum.
25 7:00 a.m. Moon farthest, distance 251,400 miles.
9:29 p.m. Algol at minimum.
26 10:28 p.m. Moon in last quarter.
28 10:03 a.m. Moon passes Mars.
6:19 p.m. Algol at minimum.
29 7:00 p.m. Venus behind sun.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, December 26, 1953

MEDICINE

Exchange Resin Makes TB Medicine Easier to Take

➤ AN ANION exchange resin is coming to the rescue of tuberculosis patients who find PAS, or para-aminosalicylic acid, hard to take.

The PAS is adsorbed on the resin and when the combination is swallowed, the hydrochloric acid in the stomach gradually displaces the PAS. As it passes into the intestine, it is absorbed by the body and carried in the blood just as efficiently as if it had been taken alone.

This new product was announced by its manufacturer, E. R. Squibb and Sons, who have tradenamed it Rezipas.

Science News Letter, December 26, 1953

AERONAUTICS

1,650 Miles Per Hour Sets New Speed Record

➤ VIRTUALLY ON the eve of aviation's golden anniversary, the U. S. again focused world attention upon the skies. Air Force Maj. Charles E. Yeager rocketed to 1,650 miles an hour in the Bell X-1A research plane.

This world speed record of Mach 2.5—which is two and a half times the speed of sound—was chalked up Dec. 12 by the 30-year-old West Virginian.

The Air Force said that Yeager's flight was the "fastest known to have been attained by any aircraft or any human being anywhere in the world."

The rocket plane was powered by one engine rated at 6,000 pounds of thrust. The designed speed of the plane is 1,600 miles an hour, and apparently Maj. Yeager coaxed another 50 mph from the little craft. Its wings measure 28 feet, and its length is 35.5 feet.

Since it has merely a 4.2-minute "range," the X-1A was carried aloft in a B-29 Superfort, then released. The 1,650 mph speed record it subsequently established will not be officially recognized. International rules dictate that all planes trying for new speed records must take off from the ground under their own power.

Maj. Yeager later told newsmen that he expects his new speed record to be shattered soon by a new rocket plane, the steel-bodied Bell X-2. The X-2's steel construction is aimed at reducing some of the heat problems created by friction at such speeds.

Science News Letter, December 26, 1953

ELECTRONICS

Optical Sensing Device

Data reader, FOSDIC, capable of translating up to 10,000,000 answer positions per hour for use in electronic computers, built by National Bureau of Standards.

➤ A HIGH speed electronic device, called FOSDIC, that can read marks on census data sheets and feed the information directly to an electronic computer for processing has been built by the National Bureau of Standards.

Use of FOSDIC will provide an accurate, convenient method for mathematically treating much of the data obtained in a census count. It is expected to reduce greatly the large volume of paper work required to summarize census information.

Designed at Standards for the Bureau of the Census, FOSDIC may be generally applied to the processing of other types of information that must be handled in large quantities such as business and labor statistics.

As part of a program to speed up processing census data, the Census Bureau has been using UNIVAC, an electronic digital computer. This machine can process data much faster than it can be translated from the data sheets, so FOSDIC, a contraction for "Film Optical Sensing Device for Input to Computers," was designed to speed up the translation process.

The machine reads microfilm copies of census takers' documents and processes the information contained in the form of positioned marks into electrical pulses that are recorded on magnetic tape. The magnetic tape can then be used directly by the computing machinery.

Basically the instrument is built around a combination of two rather common electronic devices, consisting of a cathode-ray tube and an electric eye. In combination, these two devices can visually sense whether or not pencil or pen marks exist on particular spots of an answer form. Since FOSDIC utilizes an optical principle, marks may be made with any common type of pencil or pen.

When the original documents are microfilmed, they do not have to be precisely aligned. Instead, an aligning index marker is printed on the form below each column of twelve possible answer positions. One column might contain answers to six yes-no questions.

When the device scans a census form, its beam moves across a page until it senses a mark indicating possible answers in the column above. FOSDIC then sends its scanning beam up the column, reading and recording out on the magnetic tape each tally mark. Upon completion of the column, the machine then searches for the next index.

To assure accuracy, FOSDIC keeps count of the number of columns read on each page. If for any reason a column is missed, the device makes a record on the magnetic tape informing the computer that the preceding information is not trustworthy. Under laboratory test, FOSDIC has shown that it has nearly perfect performance when good marking and filming conditions exist.

Currently the equipment is designed to provide for a maximum of some 2,800 answer locations on each frame of 16mm microfilm—an area of about one-quarter square inch. Its speed corresponds to a reading transcription rate of about 60 document sides per minute, and the transcription accuracy appears to be equal to or better than that of a skilled human copyist.

FOSDIC was shown for the first time to scientists and engineers attending the Joint Computer Conference and Exhibition sponsored in Washington by the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the Association for Computing Machinery.

Science News Letter, December 26, 1953

ZOOLOGY

Unusual Rats Collected In Thailand for Museum

➤ WEIRD RATS, some two feet long and colored orange, buff, yellow-brown and blue-gray, were among 2,000 mammals and birds collected in Thailand for the U. S. National Museum by H. G. Deignan, associate curator of birds at the Smithsonian Institution.

The rats were caught in a region of high limestone crags and forests north of the Chao-Phraya river delta.

Science News Letter, December 26, 1953

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

EXPERIMENTAL ELECTRICITY FOR THE BEGINNER—Leonard R. Crow—*Scientific Book*, 240 p., illus., paper, $2.50. A book in non-technical language intended for grade school pupils, 4-H Club members and other novices. Many experiments are described.

THE FIRST BOOK OF BRIDGES—Creighton Peet—*Franklin Watts*, 68 p., illus., $1.75. Explaining, for young boys, bridge building from simple log structures to the modern suspension bridge.

METHODS OF THEORETICAL PHYSICS: Parts I and II—Philip M. Morse and Herman Feshbach—*McGraw-Hill*, 1978 p., $30.00 (or $15.00 per volume). Presenting the mathematical tools most useful in the study of the many branches of physics, with examples of how they are used.

THE POLYPORACEAE OF THE UNITED STATES, ALASKA AND CANADA—Lee Oras Overholts, prepared for publication by Josiah L. Lowe—*University of Michigan Press*, University of Michigan Studies Scientific Series Vol. XIX, 466 p., illus., $7.50. Especially for this group of fungi, the strides made in the past half century have been tremendous in straightening out confusion and discord in nomenclature. This work brings together the newest data, although the editor points to the fact that many gaps remain to be bridged.

THE PSYCHIATRIST HIS TRAINING AND DEVELOPMENT: Report of the 1952 Conference on Psychiatric Education held at Cornell University, Ithaca, New York, June 19-25, 1952—John C. Whitehorn, Francis J. Braceland, Vernon W. Lippard, and William Malamud, Eds.—*American Psychiatric Association*, 214 p., $2.50. This book points to the pressing need for the services of psychiatrists in preventive work as well as in the care of the mental ill, and discusses primarily the training of career psychiatrists.

PUBLICITY FOR PRESTIGE AND PROFIT—Howard Stephenson and Wesley Fiske Pratzner—*McGraw-Hill*, 304 p., $4.50. Prestige in public relations is best developed through good publicity. Intended as a working manual.

SPACE TRAVEL—Kenneth W. Gatland and Anthony M. Kunesch—*Philosophical Library*, 205 p., illus., $4.75. Tracing the history of rockets from the "fire arrow" invented by the Chinese and used by them in battle in 1232, the use of the rocket in battle in Europe in 1379, German experiments in 1405, to the V-2 developed in Germany during World War II. A final chapter speculates on the future.

WHY WE SAY . . .: A Guidebook to Current Idioms and Expressions and Where They Came From—Robert L. Morgan—*Sterling*, 128 p., illus., $2.00. Many of the words and expressions that we use today reflect different cultures. The origin of some of the most popular are given here.

Science News Letter, December 26, 1953

AGRICULTURE

Corn Leaves Deceive: Starved, Look Healthy

➤ LIKE SOME children, corn can look healthy and actually be sick, F. G. Viets, Jr., C. E. Nelson and C. L. Crawford of the U. S. Department of Agriculture reported to the Soil Science Society of America meeting in Dallas, Tex.

In one field they found healthy looking plants with low yields. A check revealed that the plants were starved for nitrogen, although the leaves did not show the yellow tips commonly associated with nitrogen deficiency. Application of nitrogen to the field increased the yield.

Science News Letter, December 26, 1953

INVENTIONS

Patent Review for 1953

Numbers following items are U. S. Patent numbers. Printed copies of patents can be obtained from the U. S. Patent Office at 25 cents each. Order by number, do not send stamps, and address orders to the Commissioner of Patents, Washington 25, D. C.

Notable and interesting inventions patented during the year include:

A helicopter rotor which does not require the pilot to control the pitch of the blades. Patent 2,627,929.

A system to control the flight of antiaircraft shells and other missiles by ultra-high frequency radio signals. Patent 2,629,289.

A radar device giving both visual and audible warning to the pilot when he is approaching mountains or other obstacle. Patent 2,631,277.

Prismatic glass to cut down the glare in an automobile's rear view mirror. Patent 2,631,498.

A gas turbine engine for automobiles. Patent 2,631,427.

A twilight computer for use in planning flights over the Arctic where the twilight is extended and nights are six months long. Patent 2,633,295.

A load release to keep a wind-filled parachute from dragging its cargo across the ground, water or snow. Patent 2,634,155.

A method of scrambling television pictures, applicable to secret wartime messages and to pay-as-you-see-it systems. Patent 2,636,936.

A special helmet which allows an airplane pilot to move his head freely during normal flight, but which braces it firmly against buffeting when there is sudden acceleration or deceleration. Patent 2,638,293.

A new target for atom smashers that will cause a larger portion of the electrons to be converted into X-rays. Patent 2,640,924.

A method for cooling high speed turbine blades of rocket engines by making the blades hollow and circulating air through them. Patent 2,641,040.

An improved body armor for troops in combat, consisting of from 12 to 15 laminated layers of a tightly woven nylon fabric. Patent 2,640,987.

A quick method for imparting a hickory smoke flavor to meat. Patent 2,641,544.

A process for canning whole, fresh milk so that it does not have a cooked taste. Patent 2,642,363.

An indicator showing extent, rate and severity of airplane icing conditions. Patent 2,641,928.

A tiny camera with its own light source for taking pictures inside the body. Patent 2,641,977.

X-rays in colors which show up substances like slivers of glass invisible to ordinary X-rays. Patent 2,644,096.

A way of sending military messages by radio without enemy interception by interspersing the message signals between bursts of radio jamming pulses. Patent 2,645,677.

A weather balloon made of neoprene treated with a plasticizer to protect the fabric against the cold at night. Patent 2,646,370.

A "snap sampler" to enable a drone airplane to obtain samples of air from radioactive clouds after atom bomb explosions. Patent 2,645,940.

A flotation process for recovering uranium more easily from its ores. Patent 2,647,629.

A substance that prevents corrosion in idle internal combustion engines if sprayed into the cylinders. Patent 2,648,643.

A compound containing haloaryl sulfinic or thiosulfinic acid or their salts for use to control the growth of plants. Patent 2,632,698.

Use of strontium titanate as a substitute for ordinary glass in special telescopes and other optical instruments. Patent 2,628,156.

A device for fixing slow leaks in tires by forcing an air-setting latex paste through the rupture in the casing until it covers the hole in the inner tube. Patent 2,646,707.

A color film for the Polaroid-Land "one-minute" camera. Patent 2,647,049.

An apparatus for remote control bombing with gliders. Patent 2,649,262.

Clothing to protect servicemen against mustard gas and other vesicants. Patent 2,649,389.

An electricity-conducting glass sandwich which is fortified against operational failure, for such use as in heated windshields. Patent 2,650,976.

A safety seat, for airplane pilots and others, with a harness that tightens automatically in case of mishap. Patent 2,650,655.

A fluid drive system for turbo-prop aircraft that permits the turbine to start unloaded. Patent 2,652,730.

A submersible barge for petroleum engineers to use in deep water. Patent 2,653,452.

Plastic landing mats for temporary air fields; they grip the ground and can be stacked in layers for added strength when heavy planes are to land. Patent 2,653,525.

A rocket for remote controlled flights; it splits in two when the mission is completed and the instrument-carrying nose is lowered

safely through use of helicopter motors. Patent 2,654,320.

A device for preventing icing in a jet engine. Patent 2,654,992.

A glove hermetically sealed to garment sleeve for protecting flesh against dangerous liquids and gases. Patent 2,656,663.

A floating oil storage tank for off-shore drillers. Patent 2,655,888.

A non-wetting plastic matrix for printing electronic circuits on plastic, ceramics or glass. Patent 2,656,570.

An electromagnetic pump for handling "hot" liquids in atomic plants. Patent 2,658,452.

The synchrotron, a powerful atom smasher that increases the magnetic field in proportion to increase in mass of the electrons at high energies. Patent 2,624,841.

A warning device for dangerous temperatures in jet airplane engines. Patent 2,621,239.

A mechanical circulation device to substitute for a patient's heart and lungs during delicate heart operations. Patent 2,659,368.

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Questions

ASTRONOMY—When will a total eclipse of the sun next be visible from the U. S.? p. 407.

□ □ □

DERMATOLOGY—How can the chronic itcher get relief? p. 402.

□ □ □

ELECTRONICS—What is FOSDIC? p. 409.

□ □ □

MEDICINE—For how long has a two-headed baby been known to survive? p. 405.

□ □ □

SURGERY—Who were the original Siamese twins? p. 404.

□ □ □

Photographs: Cover and p. 403, U. S. Army; p. 405, General Electric; p. 412, Vern S. Skamser Co.

BOTANY

NATURE RAMBLINGS

Mistletoe

➤ MISTLETOE, WHICH all over the country is making boys bold and girls blush, has many reputations. None are as romantic as the one we briefly bestow on it at the Yuletide season.

For one thing, during the workaday months of the year mistletoe is thought of, if at all, preeminently as a plant pest. It is a plant that grows on trees as a parasite. In Australia mistletoe reached the status of a major pest. Its principal victim there was the eucalyptus tree, on which it worked such damage that weed killers were used in a full scale campaign against it.

Mistletoe is native to both the Old World and the New, the two being different forms of the same family. Many legends and charms were associated with the mistletoe in Europe. According to one belief, the mistletoe was once a full grown tree that grew like any proper tree on its own roots sunk firmly in the soil. Then, the legend has it, its timber was cut for the cross on which Christ was crucified. Since then it has dwindled to its present low estate, a dwarf and a parasite living off other trees.

The belief is still held in some of the more superstitious parts of Germany that mistletoe will make ghosts appear and if you talk to them they will answer you.

Among the ancient Druids, mistletoe was a symbol of spirit, since it grew in the air on the sacred oak. At the year's end, a Druid priest in a white robe would cut the mistletoe with a golden sickle. A white cloth spread on the ground made certain that the twig did not touch earth.

The people would make charm bracelets and rings of the plant. Worn on the person or fastened over doorways, it was believed to have power to ward off evil.

The seeds of this parasitic plant, which has meant so many different things to different men and different ages, are given a wide range by the birds that feed on the berries. The seeds are sticky and they adhere to the bill of the feeding bird. Later the bird will clean his bill by rubbing it against the bark of a tree.

The seed sticks to the bark. Eventually it puts out a tap root which penetrates the bark and draws on the food circulating in the tree's sap.

Mistletoe has many facets: Cupid's ally, plant pest, magic charm, wood of the cross. It is also the official state flower of Oklahoma.

Science News Letter, December 26, 1953

MEDICINE

Warns of Hearing Loss From "Gin and Tonic"

➤ "GIN AND tonic," alchoholic beverage that has grown increasingly popular, at least in eastern United States, may cause ringing in the ears and even deafness in some persons, Dr. Stephen Bennett Yohalem of New York warns in a report to the *Journal of the American Medical Association* (Dec. 5).

The ear trouble would come from the quinine in the "tonic," or quinine water. While the amount per pint is probably so small that the average grown person would have to drink an "enormous" amount to get the ear trouble, some persons have an idiosyncrasy to quinine and they might get in trouble from smaller amounts of the drink.

Science News Letter, December 26, 1953

ERRATA, Vol. 64, Nos. 1-26, July-December, 1953

PAGE	TITLE BEGINS	CORRECTION
24	New Anti-Ulcer	Last paragraph, lines 2 and 3, *read* retail for 5 to 7 cents a tablet.
47	Better Humidity	Par. 4, first sentence to *read* The instrument employs the principle of selective absorption of two bands in the infrared portion of the visible spectrum.
134	Clue to	Col. 2, lines 16-18, *read Escherichia coli, Staphylococcus aureus, Bacillus megatherium, Pseudomonas aeruginosa.*
184	Soap and Water	Research not based on experimental work, but presented new theory explaining how bacteria are killed.
196	"Cosmic Stopwatch" (p. 195)	Line 5, to a hundred years *read* to nearly 300 years.
229	Fluorescent Light	Line 4, Stoutmeyer *for* Stoutemyer.
240	Do You Know	Lines 3 and 4, order *for* family.
278		Col. 3, last line, *read* attain speeds of 70 miles an hour.

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 706. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

⚙ *AIR COOLER, although not a room air conditioning device, is placed a few feet away from the user and is plugged into a household electrical outlet. It chills and dehumidifies air passing through it and blows the cool air toward the user. In winter, it humidifies air passing through its mechanism.*

Science News Letter, December 26, 1953

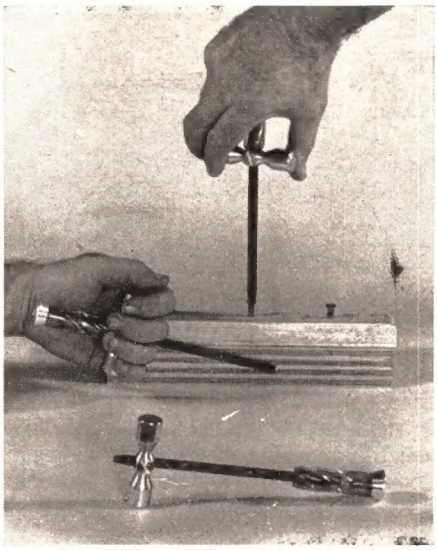
⚙ *FRY BOARD is made of hickory wood and has a little wooden handle. It is placed on meat in the frying pan to speed up the cooking. Measuring nine inches long, 3.5 inches wide and ¾ of an inch thick, the device is especially good to keep bacon "ironed out."*

Science News Letter, December 26, 1953

⚙ *DOOR PULL has an extension at its bottom so that persons can pull doors open by hooking an arm around the extension. Said to be particularly suitable for hospitals, the door pull is optional hardware on a special hollow metal door.*

Science News Letter, December 26, 1953

⚙ *SPINNING SCREWDRIVER has a special handle tip that twirls. Designed to help the housewife and mechanic tighten screws rapidly, it is shown in the photograph. In addition, a metal mallet-like device slides up the shank of the screwdriver to provide extra gripping leverage when needed. When*



positioned near the screwdriver's blade, the mallet also doubles as the business end of a tack hammer.

Science News Letter, December 26, 1953

⚙ *RUSTY-METAL PRIMER is particularly useful where rust removal by sandblasting is impractical or dangerous. Loose rust is scraped off the metal to be treated with vinyl resin-base protective topcoatings. Then the primer is applied followed by two coats of the anti-corrosion material. This primer is not recommended for new or bright metal.*

Science News Letter, December 26, 1953

⚙ *ANTI-CORROSION CHEMICAL has been developed for use on automobile battery terminals and in other situations where metal-to-metal contact breeds corrosion. The chemical is painted on the metal to be protected.*

Science News Letter, December 26, 1953

⚙ *EXTRA-WIDE BRAKE pedal for cars with automatic transmissions can be installed in less than a minute, the maker reports. Designed to be used by either the right or left foot, the pedal originally was developed to aid the handicapped driver.*

Science News Letter, December 26, 1953

⚙ *PLASTIC-TREATED MITTENS are designed especially for children who like to make snowballs. The mittens are waterproof, therefore melting snow cannot filter through to soak the fleecy innerlinings.*

Science News Letter, December 26, 1953

Do You Know?

Firearm *accidents* take about 2,200 lives annually in the U. S.

The U. S. consumes 35% of the world's total *soap* production.

Heating pipes are being installed as a part of Boston's new *expressway* to melt snow and ice from all access ramps.

Water stains on glass pitchers and vases usually can be removed by rubbing them vigorously with freshly cut potato.

In America there are more than 4,400 privately owned *tree farms*, operated on about 28,000,000 acres.

The sales value of *soft drinks* in 1952 exceeded that of ice cream and almost equalled the production value of the plastics industry.

It is not safe to collect young, unopened *mushrooms* for eating, since it is often difficult to distinguish between poisonous and edible species in the early stages.

A specially built labor-saving device has been introduced on a *railway* project in North Norway; weighing seven tons, it lays 108-foot lengths of rail at a time, complete with 52 pre-fixed cross ties.